



ST-1000

Clean Bright Focused Photons

Source

The brightest incoherent extreme ultraviolet (EUV) light source available, the ST-1000 is built around a robust optical system that allows EUV photons to be collected and delivered to an intermediate focus (IF) where the application receives debris free light.

The collector optic used to achieve this is the NewLambda Technologies patented liquid metal coated mirror. This allows the NewLambda Technologies team to magnify a tiny laser plasma source (< 30 microns) into a narrow solid angle beam (< 2.5 degree half angle). The small source is ideal for etendue matching to microscope systems where the field of view is small, such as mask metrology systems in semiconductor metrology at 13.5 nm, or photoelectron emission microscopes, which can make use of a broader photon range.

The technology allows high brightness sources to be delivered with moderately

powered lasers, and scaling the output brightness is simple.

Applications

For semiconductor mask metrology applications, the ST-1000 is optimised to deliver $> 150 \text{ W/mm}^2\text{sr}$, into the industry required 2% bandwidth around 13.5 nm. For applications outside EUV lithography and metrology, the source can deliver 10^{11} photons/sec/mm²/mrad² into a 0.1% band across a wavelength range from 200 nm to 2 nm (brilliance comparable to synchrotrons).

All of this is delivered in a virtually closed system operating at a vacuum level of below 10^{-6} mbar, where the consumable costs are limited to the input laser wall-plug power of a few kilowatts. There are no expensive gases and, because the system couples the EUV photons out through a 300 micron aperture approximately 600 mm from the plasma, any filters used have a long lifetime, and are easily protected.

Product Specifications

Source

Source Brightness	: $> 150 \text{ W/mm}^2\text{sr}$ (13.5 nm 2% band)
Source Brilliance	: $> 10^{11}$ photons/sec/mm ² /mrad ² (2 to 200 nm, 0.1% Band)
Source Size	: < 30 microns FWHM

System

Dimensions	: 1m X 1m X 1.2m (plus 19" control rack)
Power Consumption	: 4kW (air or water cooled)
Utility Requirements	: 20 C water (optional)
Operating Pressure	: $< 10^{-6}$ mbar



NewLambda Technologies